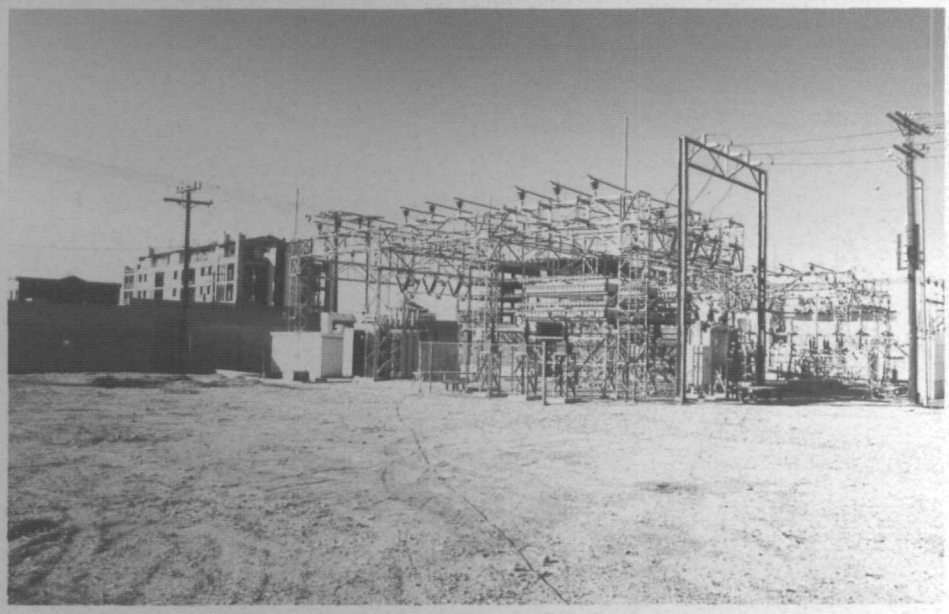
8/11
Week of 8/19
for sampling

Sampling and Analysis Plan
Revision 0

Former Vermiculite Intermountain Facility-SLC2
100 South 333 West
Salt Lake City, Utah

Libby Sister Sites (Asbestos Project)

July 2003



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Revision 0
Sampling and Analysis Plan
for
Libby Sister Sites (Asbestos Project)
Former Vermiculite Intermountain Facility-SLC2
Salt Lake City, Utah

EPA Region VIII

July 2003

Contract No. DTRS57-99-D-00017
Task Order No. C0023

Prepared for:

U.S. Environmental Protection Agency - Region VIII
Emergency Response Office
Denver, Colorado

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Contract No. DTRS57-99-D-00017
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Acronyms

ACM	asbestos-containing material
AIHA	American Industrial Hygiene Association
ASTM	American Society for Testing and Materials
CDM	CDM Federal Programs Corporation
cm^2	square centimeter
COC	chain-of-custody
DI	deionized
DPT	direct-push technology
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
FSDS	Field Sample Data Sheet
GPS	global positioning system
IAG	interagency agreement
LA	Libby asbestos
L/min	liters per minute
µm	micron
MCE	mixed cellulose ester
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
OSC	on-site coordinator
OSHA	Occupational Safety and Health Administration
PCM	phase contrast microscopy
QA/QC	quality assurance/quality control
MACTEC	MACTEC Companies
PLM	polarized light microscopy
RA	removal assessment
SAP	sampling and analysis plan
SDG	sample delivery group
SHSP	site health and safety plan
SLC1	Salt Lake City #1
SLC2	Salt Lake City #2 (original site)
SOP	standard operating procedure
TEM	transmission electron microscopy
UDEQ	Utah Department of Environmental Quality
USGS	U.S. Geological Survey
Volpe Center	John A. Volpe National Transportation Systems Center
°F	degrees Fahrenheit

Section 1
Introduction

The U.S. Department of Transportation's John A. Volpe National Transportation Systems Center (Volpe Center) has an Interagency Agreement (IAG) with the U.S. Environmental Protection Agency (EPA) Region VIII for environmental engineering and related support.

Since November 1999, the Environmental Engineering Division (DTS-33) of the Volpe Center has been providing EPA Region VIII with immediate environmental engineering and site assessment support at Libby, MT. The Volpe Center, its contractor CDM Federal Programs Corporation (CDM), and CDM's subcontractor MACTEC Companies (MACTEC), have been requested by EPA Region VIII to conduct walk-through site visits and limited sampling activities to support removal assessment (RA) reporting at two locations within Salt Lake City. These locations were identified, via the U.S. Geological Survey (USGS) or Bureau of Mines publications, to have received asbestos ore or vermiculite from Libby, Montana. Both of the sites have performed either small batch exfoliation, used vermiculite as part of a manufacturing process, or sold vermiculite.

This sampling and analysis plan (SAP) defines sampling and analytical procedures that will be used for conducting expanded media sampling at the former Vermiculite Intermountain facility located at 333 West 100 South (SLC2), in Salt Lake City, Utah.

1.1 Project Objectives

The objectives of the Libby Sister Sites (Region VIII) project are to:

1) Determine if any potential sources of Libby Amphibole (LA) (tremolite/actinolite series) asbestos are present at the site related to the processing of vermiculite ore. Potential sources to be investigated include soil, waste/product, dust inside buildings, and ambient air.

2) Document any observed evidence of vermiculite product or other related waste with detailed notes and digital photographs.

3) Determine the vertical and horizontal extent of asbestos contamination.

Define the 'Site' and relate everything else to it. (i.e. adjacent properties).

1.2 Project Organization and Responsibilities

Organization and responsibilities specific to this field investigation are listed in this section. For this data collection effort, key management personnel are as follows:

Individual	Role
Floyd Nichols	EPA On-Scene Coordinator (OSC)
John McGuiggin	Volpe Center Project Manager
Paul Kudarauskas	Volpe Center Field Team Leader
Tim Wall	CDM Project Manager
Frank Morris	CDM Task Leader
Tommy Cook	CDM Field Team Member (soils/waste/product)
Jennifer Oxford	CDM Quality Assurance Coordinator
Brian Stewart	MACTEC Task Leader
Melissa Petrak	MACTEC Field Team Member (dust/air)

The entire field and data gathering effort will be conducted by a team consisting of one CDM member who will be responsible for the soil and waste/product sampling and one MACTEC member in charge of dust sample collection and ambient/personal air sampling. The team will have a designated Volpe Center team leader. The contractor team lead will have prior experience with performing similar activities under the EPA Region VIII Libby Asbestos Project. A Volpe Center and/or EPA representative will accompany the field team and will work with contractor personnel to determine the site-specific sampling requirements for each site.

Section 2
Project Background

2.1 Source of the Vermiculite

The Town of Libby is located in the extreme northwest corner of Montana. According to historical mining records, up to 80 percent of the world's vermiculite has come from the W.R. Grace Vermiculite Mine located on Zonolite Mountain approximately seven miles northeast of Libby. Vermiculite is a mineral that is used in various building materials and textiles. Disseminated within the enormous deposit of vermiculite on Zonolite Mountain is the mineral tremolite, a rare and toxic form of asbestos. Over the approximately 60-year life of the mine, tremolite asbestos was released into the environment as a by-product of the mining and ore-processing activities.

The Zonolite Mine began operation in 1924 by owner Edward Alley. In 1925, Great Northern Railroad shipped the first boxcar of "zonolite" from Libby to an Ohio company that used it to insulate bank vaults, office safes, and filing cabinets. Other firms used the material to make building boards and roofing materials. Processing the material was straightforward. The vermiculite ore was stripped from the mine and hauled in trucks to a mill, where it was separated into various commercial sizes through a screening system. Some of the ore was shipped untouched. Other material was sent to an expansion plant where it was processed in ovens at approximately 2,000 degrees Fahrenheit (°F), causing the material to expand to 15 times its original size. In 1939, Alley's Zonolite Mine merged with another mining company that eventually became known as the Zonolite Co.

In 1963, the company was sold to W.R. Grace and Co. who expanded the operation and increased production. Through the '60s, '70s, and '80s, millions of tons of Libby vermiculite ore were shipped by rail to numerous processing plants in 30 states and six foreign countries.

2.2 Environmental Setting

EPA has determined that the vermiculite ore mined from the mountains surrounding Libby, MT is contaminated with LA asbestos. The ore was shipped throughout the United States both as a processed and unprocessed material. The EPA has been conducting various investigations to determine other potentially contaminated properties (outside of Libby), which may have been impacted by the Libby mining operations. In support of these investigations, the Volpe Center has been requested by EPA Region VIII to conduct a walk-through at the former Vermiculite Intermountain facility in Salt Lake City, UT. This location was identified by USGS and Bureau of Mines publications as a site that received ore or vermiculite from Libby, MT. Each of the sites requiring further investigation either performed small batch

exfoliation, used vermiculite as part of a manufacturing process, or sold vermiculite directly.

This SAP defines sampling and analytical procedures that will be used for conducting additional media sampling at the former Vermiculite Intermountain facility in Salt Lake City, Utah. The site where the former plant was located is now owned by Utah Power (Pacific Corporation). The footprint of the now demolished exfoliation plant and former railroad spur are adjacent to and overlap onto an electrical substation.

2.3 Previous Investigations

2.3.1 Site Description/Known History

SLC2 is located at 100 South 330 West just south of the Delta Center in downtown Salt Lake City (Figure 2-1). The site is situated between a power transfer station and an asphalt parking lot. The aerial photograph shown in the figure was taken in 2000 from digital imagery obtained from Olympus Aerial Surveys, Inc. According to historical records, SLC2 was the original location for the Intermountain Insulation Company (formerly Vermiculite Intermountain) processing facility. The former processing facility is now demolished and the site is currently owned in part by Pacific Corporation, a parent company of Utah Power and Light. The original plant boundaries probably encompassed adjacent properties including the asphalt parking lot and a storage business.

The exfoliation plant was formerly known as Vermiculite Intermountain. The company later changed its name to Intermountain Insulation (date unknown). Vermiculite-containing material was shipped to SLC2 via railcars. According to interviews with a previous employee, the material was scattered about the property due to leakage from standing rail cars and from the actual transfer of the material from the railcars to the processing plant.

Historical research conducted by the EPA On-Scene Coordinator prior to any sampling activities indicated that Intermountain Insulation had operated at this site from approximately 1940 to 1984 before relocating their operations to 733 West 800 South (SLC1). Intermountain Insulation, under license to W.R. Grace Construction Products Division, manufactured and distributed insulation, fireproofing, vermiculite soil conditioner, masonry fill and concrete plaster aggregate until the company went bankrupt in 1987.

The original site work which involved surface and subsurface soil sampling and baseline ambient air sampling was conducted by Ms. Joyce Ackerman (EPA), Mr. Paul Kudarauskas (Volpe Center), Mr. Frank Morris (CDM), and Melissa Petrak (MACTEC) on October 14 through October 16, 2002. The findings of this initial investigation are reported in a summary report (CDM 2003a).

As appropriate, data derived from the 2002 efforts will be incorporated with that developed during the 2003 efforts.

Vermiculite was identified throughout the gravel lot south of the on-site building. Small piles of vermiculite product (or waste) were also confirmed on the site.

2.4 Contaminant of Concern

The only potential contaminant of concern investigated at this site is asbestos, specifically the amphibole minerals from the Libby, MT mine. Asbestos fibers are odorless and tasteless and vary in length, structure, and chemical composition. Fibers are microscopic and environmentally persistent. They do not evaporate, burn or dry out from heat, or erode in water. Toxicity of different type fibers varies, but exposure to any one of them can ~~be fatal.~~ cause detrimental human health effects. LA, especially tremolite and actinolite, are considered by many to be the most toxic.

The human health risks associated with asbestos fibers released in the environment include:

- Malignant mesothelioma, a cancer of the pleural or peritoneal cavity. In early stages of the disease, cancer is found in the lining of the chest cavity near the lung and heart or in the diaphragm. Mesothelioma may spread to tissue surrounding the lungs or other organs. Virtually all mesothelioma cases are attributable to asbestos exposure.

- Asbestosis, the scarring of the tissue of the lung itself from inhalation of fibers. It ranges in severity from mild impairment to disabling and eventually fatal.

Asbestos and smoking both cause lung cancer, but a history of smoking combined with exposure to asbestos creates a much higher risk of developing asbestos-related diseases. in the population exposed to both contributing sources.

bulk soil analysis via PLM
(grind the hell out of it)
dust analysis via TEM

Section 3
Data Quality Objectives

To ensure that data of sufficient quality and quantity are collected to meet project objectives, the data quality objective (DQO) process (EPA 2000) was utilized to develop DQOs for the soil, waste/product, dust, and air sampling tasks. The DQO process is a series of steps based on the scientific method that are designed to ensure that the type, quantity, and quality of environmental data used in decision making are appropriate for the intended purpose. The DQO process consists of the following seven steps:

Step 1:	State the Problem;
Step 2:	Identify the Decision;
Step 3:	Identify Inputs to the Decision;
Step 4:	Define the Study Boundaries;
Step 5:	Develop a Decision Rule;
Step 6:	Specify Limits on Decision Errors; and
Step 7:	Optimize the Design for Obtaining Data.

During the first six steps of the process, the planning team develops decision performance criteria that are used to develop the data collection design. The final step of the process involves developing data collection design based on DQOs.

3.1 Problem Statement

This plan was developed at the request of the Volpe Center to determine if the former Vermiculite Intermountain facility in Salt Lake City, Utah (now an identified Libby Sister Site) has been impacted by asbestos. Materials present at the site, including soil, dust, and waste/product may contain LA. These materials could potentially produce airborne asbestos within and around the site. These materials could present a hazard to anyone located in and surrounding the area of the former processing plant.

The stakeholders associated with decisions for this site include the Volpe Center, U.S. EPA Region VIII, current owner of the site, Utah Department of Environmental Quality (UDEQ), and any other regulatory agency that addresses health and safety standards for asbestos.

3.2 Identify the Decision

Data collected during this assessment will be used to determine if this particular Libby Sister Site has been impacted by LA asbestos. Specifically, the data will be used to answer the following questions:

* Is LA present at the site or on adjacent properties and at what concentration

1) ~~Are the wastes/products or soils considered asbestos-containing materials, specifically LA?~~

2) ~~How widespread is the contamination?~~ what is the extent of LA contamination at the site and on adjacent properties.

3) Are the LA asbestos fiber levels a possible health threat? what is the possible human health threat from the observed LA concentrations.

The above alternative actions will be selected and could be modified depending on the LA concentration (i.e., asbestos toxicity) determined at the site.

Affirmative response to the study questions will generate alternative actions. The following alternative actions could be initiated:

(a) Initiate removal or remedial action (i.e., cover exposed areas) of the wastes/product at the site. and on adjacent properties found to be impacted.

(b) Conduct further investigation to determine if the asbestos concentrations are associated with the Libby vermiculite ore (i.e., alternative analyses). * respondents

(c) Take no action.

3.3 Inputs to the Decision

The purpose of this step is to identify the information that needs to be obtained and the measurements that need to be taken to address the study questions.

Is it there? what kind is it?

According to the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (EPA 1990), a friable asbestos-containing material is defined as "any material containing more than 1 percent asbestos as determined using polarized light microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure." Therefore, to answer the first question, the decision-makers need to know the concentrations of asbestos in the soil and waste/product to determine if they are an asbestos-containing material (ACM) using methods described in Section 5.0 and detailed in Appendix D. The decision-makers also need to know the concentration of asbestos in the breathing air surrounding any personnel coming in contact with ACM or disturbing the environment. This will allow them to determine if those concentrations are above regulatory or other risk-based levels that may pose a threat to human health.

how widespread?

The second question can be answered by evaluating the spatial distribution of the analytical results for soil samples. These results will indicate whether or not asbestos was identified, what type (i.e., LA or chrysotile), and how widespread it is with respect to grid or transect locations.

Indoor dust samples collected at random locations do not fit definition of 'grid or Transect'.

EPA toxicologists and risk managers will answer the third question by evaluating the asbestos levels and determining whether or not a health threat exists at the site.

3.4 Boundaries for the Removal Assessment

This step defines the spatial and temporal boundaries for the assessment.

Spatial Boundaries

The horizontal boundaries for the soil and waste/product sampling assessment are the approximately property boundaries ~~(until access agreements are in place for offsite sampling)~~. The vertical boundaries are from approximately 1.5 feet below the exposed solid surface to the top of the highest pile or mound of soil. Vertical boundaries ~~can~~ be extended downward ~~in order~~ to visually describe the depth of vermiculite or product contamination. Spatial boundaries for the microvac dust sampling include the interior (including the ceiling) of any onsite building or any equipment planned to be moved offsite. If any ambient air samples are collected, the horizontal boundaries are the property boundaries associated with this particular Libby Sister Site and the vertical boundaries are from the ground surface to approximately six feet above ground (breathing zone). For the personal air monitoring, the boundary is the general breathing zone.

Temporal Boundaries

Temporal boundaries include the time frame from when the former site ceased operation (stopped processing vermiculite) through the time of sampling.

3.5 Decision Rule

The purpose of this step is to define the parameter of interest, specify the action level (if known), and integrate previous DQO outputs into a single statement/statements that describes a logical basis for determining whether the site has been impacted by asbestos. The parameters of interest are the concentrations of asbestos in soil, waste/product, dust, and air and the presence or absence of asbestos in the dust. Site specific action levels for soil and waste/product will be determined by EPA toxicologists and risk managers only if concentrations are considered a potential health threat at this site, therefore no decision rules are presented at this time. The various alternative actions that may be taken were previously discussed in Section 3.2.

3.6 Specify Tolerable Limits on Decision Errors

The purpose of this step is to specify the decision-maker's acceptable limits on decision errors. Decision-makers are interested in knowing the true value of the asbestos concentrations. There are several reasons why decision-makers may not know the true asbestos concentration in soil or waste/product:

1) There may be a high degree of variability of asbestos concentration within a sample. Although a sample may be thoroughly mixed, only a small portion of the sample is used for analysis. This could result in an under- or over-estimate of the actual asbestos concentration.

2) Other fibers with optical properties similar to asbestos minerals may give false positive interferences. This could result in an over-estimate of the actual asbestos concentration.

3) The optical properties of asbestos may be obscured by a coating on the fibers. This could result in an under-estimate of the actual asbestos concentration.

4) Fibers finer than the resolving power of the microscope (about 0.3 microns [µm]) will not be detected. This could result in an under-estimate of the actual asbestos concentration.

5) Heat and acid may alter the index of refraction of asbestos and change its color. This could result in an under-estimate of the actual asbestos concentration.

The null hypothesis for this assessment is that soils and waste/product have LA asbestos concentrations less than 1 percent or greater and the LA asbestos concentrations in the air and dust are above the regulatory levels.

A false positive or "Type I" decision error refers to the type of error made when the null hypothesis is rejected when it is actually true, and a false negative to "Type II" decision error refers to the type of error made when the null hypothesis is accepted when it is actually false. For this assessment, a Type I decision error would result in deciding that soil, waste/product, dust or air contained asbestos that are above the action levels (i.e., "dirty") when they actually did not. A Type II decision error would result in deciding that soil, waste/product, dust or air contains asbestos below the action level (i.e., "clean") when they actually did not. The closer the reported concentration is to the action level, the higher the probability that an incorrect decision will be made and, therefore, a "gray region" may be established that surrounds the action level. However, for this project, no "gray regions" have been established.

The PLM method for soil and waste/product is semi-quantitative and lacks the necessary precision to establish a "gray region." Therefore, given the lack of quantified analytical precision the action level, a tolerable decision limit for soil and waste/product analyses of +100% of the action level is reasonable to allow the decision-makers to exercise professional judgement and limit Type I errors. A Type II error rate of 100 percent less than the action level would mean that a zero percent result would still lie within the allowable error range. By having a decision error limit of ±100 percent, this allows the decision-maker the option to either have the sample reanalyzed, analyzed by another method (e.g., transmission election microscopy [TEM]), or determine that the site has been impacted based on professional judgment.

For air samples, the "worst case" air samples will be used to determine if the site has been impacted by asbestos. Therefore, a "gray region does not need to be established. However, because human health and safety are involved, a decision error limit below the action level of -50 percent of the action level for air is established. By having a decision error limit of -50 percent for air samples, this allows the decision-makers the option to either have the sample further analyzed (e.g., counting more grids), reanalyzed, analyzed by another method, (e.g., phase contrast microscopy [PCM]), or determine that a site has been impacted (i.e., pose a possible health hazard) based on professional judgement.

3.7 Optimize the Design for Obtaining Data

The purpose of this step is to identify the most resource-effective sampling design that generates data that satisfy the DQOs in the previous steps. The sampling program described in this SAP is consistent with the DQOs and project objectives for the assessment. However, if during the period of sample collection and/or evaluation, it becomes apparent that the quantity and/or distribution of samples is not sufficient for obtaining the data required to properly characterize soil, waste/product, dust ,or air for this assessment, the number, distribution, or methods may be modified to reflect the specific needs of the project. Any changes to this SAP will be approved by EPA and the Volpe Center prior to implementation. In addition, any deviations to this SAP will be noted in the applicable field logbook and subsequently discussed in data summary reports.

Sec 4.

- Assume access permissions gained for adjacent properties. Will be to at least min, as appropriate.

  Cover through Ampco parking lot:
  surface and/or subsurface samples
  along property lines and in
  drainage/down-gradient areas
  Indoor dust samples
  Perimeter (city side walk) soils

- Limited number of surface efficacy samples collected from 'footprint' area where UPL did surface remediation in 10/02.

- ?? Be prepared to collect ≤ 3 grab samples for subsequent PCB analysis.

Section 4
Field Activities and Sampling Procedures

CDM was tasked by the Volpe Center to provide all personnel, material, equipment, and supplies to complete the tasks identified below related to sampling and investigative support at the SLC2 site. This section describes the procedures that will be followed for information gathering, sample collection, handling, shipping, analysis, and documentation.

4.1 Site Information and Access Agreements

As part of the onsite investigation activities, CDM will gather and verify current and historical information at the SLC2 site (if not previously done). An interview or meetings with the current site contact (property owner) may have already been accomplished or arranged for by the EPA or the Volpe Center prior to arrival onsite. Signed access agreements, acquired by the EPA, and insurance documents will be required before any sampling activities commence.

4.2 Site Investigation and Photographic Documentation

CDM will take detailed notes and digital photographs during the investigation and will document the existence of any suspect asbestos materials. Differential global positioning system (GPS) locations and photographs will be taken and logged for each sample point in accordance with CDM Standard Operating Procedure (SOP) 4-2 Photographic Documentation of Field Activities.

4.3 Soil Sampling

4.3.1 Selecting Soil Sampling Locations

Actual soil sample locations will be field determined by the EPA OSC and coordinated through consultation with the Volpe Center Field Team Member and CDM Project Manager.

Soil samples will be collected from unpaved areas outside of the buildings, on and off site. Additional sampling may include direct-push technology (DPT) methods to multiple depths, including possible coring through asphalt or concrete.

Approximately 70 surface and subsurface soil samples are currently proposed (Figure 4-1) as part of the RA. Actual locations and depths of sample locations are dependent on the needs and goals of the EPA OSC and Volpe Center field team member. Locations will be determined in the field and will be dependent on observed conditions. Grab samples were previously collected for the first walk-through sampling effort (CDM 2003a); however, five-point composite sampling has been recommended for further surface soil investigation of this site. Sampling efforts may

change at the discretion of the EPA OSC. The type and location of samples that are collected will be documented on the field sample data sheets (FSDS) (Appendix A).

Approximately 10 subsurface soil samples will be collected outside the perimeter of the former processing building (Figure 4-1). The soil borings will advance to approximately 1.5 feet below ground surface using DPT methods. Collection of these samples will be dependent on access to the property.

Any additional sampling procedures or changes to the plan (e.g., concrete coring) will be documented in detail in the applicable field logbook.

4.3.2 Sample Identification

Each soil sample will be labeled with two unique codes indicating an index identification and location identification. The first code is taken from a list of unique alpha-numeric sequence prepared by CDM for the Region VIII Libby Sister Sites. This coding system is designed to prevent accidental duplication of sample identification numbers and ensures that all samples have a unique identification number assigned to them. These codes start at 1R8-xxxx or 2R8-xxxx corresponding to the soil sampling team (CDM) and the air sampling team (MACTEC), respectively. The last five numbers are sequential so that thousands of unique codes are available, if necessary. To ensure that the laboratory is "blind" and does not receive certain specific information about a sample, only the index identification code, along with sample date and time, will be used to label sample containers.

The second sample code is a field identification code used by CDM to provide each soil sample with a unique identification code which will allow for the tracking and retrieval of information concerning each sample. Each surface soil sample will be identified by a site identifier, a location identifier, a media identifier, a station identifier, and the depth range of sample collection in inches.

An example is LSS-UTSL-SO-S01-01-02 which indicates that a sample was collected by CDM as part of the Libby Sister Sites asbestos investigation (LSS), that it was collected from the former facility in Salt Lake City, UT (UTSL), that it was a soil sample (SO), from grid station 01 (01), and that it was collected from a depth of 0 to 2 inches (00-02). The station identifier may also be a feature such as a railroad (R##) or a traverse (T##). The first letter of the location identifier will be changed to a D for duplicate samples (e.g., DTSL). This coding system may be modified to suit field conditions and any modifications will be clearly described in the applicable field logbook.

4.3.3 Collecting Soil Samples

All soil samples will be prepared in accordance with the CDM Close Support Facility Soil Preparation Plan (CDM 2003b) and analyzed by National Institute of Occupational Safety and Health (NIOSH) Method 9002, Asbestos (bulk) by PLM Method 9002 (Appendix D). All soil samples will be collected in accordance with CDM Technical SOP 1-3 Surface Soil Sampling and SOP 1-4 Subsurface Soil Sampling

(Appendix B), with modifications. The following modifications to SOP 1-3 and SOP 1-4 have been reviewed and approved.

Section 2.2, Discussion - Sample depth for surface soil will generally be 0 to 2 inches from the current ground surface. However, if a sample is required from a compacted dirt road, the depth from 0 to 1 inch will be acceptable assuming a sufficient amount of soil can be obtained. Limited subsurface soil samples may also be required; however, depths will likely be limited to 1.5 feet. Composite samples will be composed of nearly equal portions of soil from five randomly discrete locations within a horizontal radius of approximately 25 feet. The field composite sample will be obtained from an aliquot of total volume of homogenized soil. The actual composite sample for PLM analysis will be prepared at the CDM laboratory in Denver. The laboratory sample will be a split of the processed (i.e., dried, crushed, and homogenized) volume of soil. If vermiculite is observed within the 25 foot radius, it will be included as at least one discrete biased portion of the field sample. Generally, grid and/or traverse segment size will be measured on 50-foot centers.

Section 4.0, Required Equipment - Neither ice bags nor blue ice will be used. Powder-free nitrile gloves will be used for sample collection. No pans, trays, or bowls are necessary, since samples will be placed directly into zipper-top bags. Since the sampling is for asbestos, rather than metals or organic compounds, the use of stainless steel or Teflon-lined sampling instruments is determined not to be necessary. The sampling devise may be a garden bulb planter, trowel, DPT macrocore, or other similar sampling device. A list of equipment that may be used for sampling is included in Table 4-1.

Section 5.2.3, Method for Collecting Samples for Nonvolatile Organic or Inorganic Compound Analysis - One-gallon zipper-top bags will be used as sample containers. The one-gallon bags will be filled at least half full. Sampling information will be written directly on the bags using a permanent marker. Sampling instruments do not need to be constructed of stainless steel or Teflon lined. Trays and bowls will not be used, as samples will be placed directly into zipper-top bags. Field homogenization will be performed by manipulating the sampled material inside the zipper-locked bag. All samples will be double bagged for shipping to the Denver lab and further processing.

4.3.4 Sample Documentation

Sampling activities during this assessment will be documented in the applicable field logbooks (and on FSDSs, Appendix A) to be maintained by the field team in accordance with CDM SOP 4-1 Field Logbook Content and Control (Appendix B). The field team leader will be responsible for maintenance and document control of the field logbook.

4.3.5 Sample Custody, Packaging, and Shipping

This section details the sample custody and the classifying, identifying, labeling, packaging, and transporting of soil samples collected during this investigation. Procedures will be in accordance with CDM SOPs 1-2 Sample Custody and 2-8 Packaging and Shipping of Environmental Samples (Appendix B) as described below.

Sample classification is necessary to ensure the protection of personnel involved in the shipment of samples, and to maintain the integrity of each sample. Samples obtained at uncontrolled hazardous waste sites are classified as either environmental or hazardous samples. All samples collected during this investigation will be classified as environmental.

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, chain-of-custody (COC) records will be used. The COC record is employed as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. COC procedures will follow the requirements set forth in CDM SOP 1-2 Sample Custody. The following modifications to SOP 1-2 have been reviewed and approved:

Section 5.2, Sample Labels and Tags - Rather than using labels or tags, samples will be identified by writing sample index information directly on the one-gallon zipper-top bags using permanent markers.

Samples collected during this investigation will be packaged and shipped in accordance with CDM SOP 2-8 Packaging and Shipping of Environmental Samples (Appendix B), with modification. The proposed modifications to SOP 2-8 are as follows:

Section 4.0, Required Equipment - No vermiculite or other absorbent material will be used. No bubble wrap or ice will be used.

Section 5.0, Procedures - Lining the cooler with a garbage bag is determined not to be necessary since the samples will already be double-bagged. No vermiculite or other absorbent material will be used to pack the samples. No ice will be used.

4.3.6 Quality Control Samples

Quality control (QC) data are necessary to determine precision and accuracy of sample collection techniques and to demonstrate the absence of interference and/or cross-contamination. For this investigation, a soil QC sample will consist of a duplicate taken from an environmental sample in the field following homogenization in the zipper-top bag.

Soil duplicate samples will be analyzed at a rate of one per twenty soil samples per site (i.e., 5 percent). For each group of twenty sequentially collected natural samples (e.g., 1R8-0001 through 1R8-0010), any one of the twenty samples may be duplicated. The duplicate sample will receive a unique index identification code.

Field duplicate samples may be collected in the field where one portion of this sample (split) will be given to a stakeholder representative. These split samples are collected the same as a duplicate sample using a unique index identification code. However, the remainder of the sample will be archived at CDM's laboratory located in Denver, Colorado. A COC form is completed without identifying any analyses and should identify the sample was split as noted in the comment section. The samples, signed copy of the COC, and corresponding field data sheet will be transferred to the stakeholder representative.

No other soil QC samples (e.g., field blanks, interlaboratory splits, etc.) are planned. Rinsate samples are used to evaluate the effectiveness of decontamination procedures. The soil analyses used for this project have a relatively high limit of detection and cross-contamination from sampling equipment would have to be extreme to be detectable in a sample. Decontamination of equipment to be visually clean will be sufficient to avoid cross-contamination and, therefore, no rinsate blanks will be collected.

4.3.7 Equipment Decontamination

Equipment used to collect, handle, or measure soil samples will be decontaminated in accordance with CDM SOP 4-5 Field Equipment Decontamination at Nonradioactive Sites, with modification (Appendix B). The following modifications to SOP 4-5 have been reviewed and approved:

Section 5.0, Procedures - Decontamination water will not be captured and will be discharged to the ground at the site.

Section 5.3, Sampling Equipment Decontamination - ASTM Type II deionized (DI) water will not be used. Rather, locally available DI water will be used. Decontamination water will be discharged to the ground at the site.

Section 5.6, Waste Disposal - Decontamination water will not be captured and will not be packaged, labeled, or stored as investigation-derived waste.

The decontamination procedure for non-disposable equipment consists of a tap water and alconox wash with brush scrubbing, followed by a tap water rinse, and final DI water rinse. The equipment will then be allowed to air-dry before being wrapped in clean plastic or aluminum foil. All equipment will be decontaminated before coming into contact with any sample. Rinse water will be discharged to the ground at the site. Any deviations from the decontamination procedures will be recorded in the appropriate field logbook.

4.3.8 Health and Safety

All sampling will be performed in accordance with applicable EPA, Occupational Safety and Health Administration (OSHA), corporate, and site health and safety requirements. CDM has prepared a Site Health and Safety Plan (SHSP) for the site that is attached as Appendix C.

4.4 Waste / Product Sampling

4.4.1 Selecting Sample Locations

Waste/product sampling is not currently scoped for this site. If new sources of product are discovered, then additional sampling locations may be opportunistic. Approximately two waste/product samples will be collected (if found) at the project site. Potential locations would be from around the foundation of the structure used for processing or containing product and the other from outside where the product was stockpiled.

Due to limited knowledge of the project site, the specifics of any waste/product sampling locations will be determined on-site. The EPA OSC and/or Volpe Center Field Team Member working with the sampling team will determine the number, locations of waste/product samples to be collected at this site and the analytical method. The EPA OSC will also direct the CDM team on the required depth and composite nature of each sample.

4.4.2 Sample Identification

Each bulk sample will be identified with a unique index identification code. The index identification code is a sequential list of sample numbers that will be used for all of the samples collected including soil, waste/product, air, and dust samples. This coding system (see Section 4.3.2) is designed to prevent accidental duplication of sample identification numbers and ensures that all samples have a unique identification number assigned to them. To ensure that the laboratory is "blind" and does not receive certain specific information about a sample, only the index identification code, along with sample date and time, will be used to label sample containers.

Each waste/product sample will also be identified by a site identifier, a location identifier, a media identifier, a station identifier, and the depth range of sample collection in inches. An example is LSS-UTSL-WP-P01-00-06 which indicates that a sample was collected by CDM as part of the Libby Sister Sites asbestos investigation (LSS), that it was collected from the former facility in Salt Lake City, UT (UTSL), that it was a waste/product (WP), that it was from pile 01 (P01), and that it was collected from a depth of 0 to 6 inches (00-06). The station identifier may also be a structure such as a building or shed (B##). The first letter of the location identifier will be changed to a D for duplicate samples (i.e., DTSL). This coding system may be modified to suit field conditions and any modifications will be clearly described in the applicable field logbook.

4.4.3 Collecting Samples

All waste/product samples will be prepared in accordance with the CDM Close Support Facility Soil Preparation Plan (CDM 2003b) and analyzed in accordance with National Institute of Occupational Safety and Health (NIOSH) Method 9002, Asbestos (bulk) by PLM (Appendix D).

The samples will be collected by placing product or waste material into a one gallon plastic zipper-top bag until it is approximately half full. This bag will then be placed into a second plastic zipper-top bag. All waste/product samples will be double bagged. Sampling personnel will wear disposable nitrile gloves while sampling. A new pair of gloves will be donned prior to each sample being collected. Sampling personnel will also wear an appropriate level of respiratory protection at all times while collecting waste/product samples.

4.4.4 Sample Documentation

Sampling activities during this assessment will be documented in the applicable field logbooks and on FSDSs (Appendix A) to be maintained by the field team in accordance with CDM SOP 4-1 Field Logbook Content and Control (Appendix B). The field team leader will be responsible for maintenance and document control of field logbooks.

4.4.5 Sample Custody, Packaging, and Shipping

This section details the sample custody and the classifying, identifying, labeling, packaging, and transporting of waste/product samples collected during this investigation. Procedures will be conducted in accordance with CDM SOPs 1-2, 2-8, and 4-5 (Appendix B) as described below.

Sample classification is necessary to ensure the protection of personnel involved in the shipment of samples, and to maintain the integrity of each sample. Samples obtained at uncontrolled hazardous waste sites are classified as either environmental or hazardous samples. All samples collected during this investigation will be classified as environmental.

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, COC records will be used. The COC record will be employed as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. COC procedures will follow the requirements set forth in CDM SOP 1-2 Sample Custody. The following modifications to SOP 1-2 have been reviewed and approved:

Section 5.2, Sample Labels and Tags - Rather than using labels or tags, samples will be identified by writing sample information directly on the one-gallon zipper-top bags using permanent markers. All samples will be double-bagged.

Samples collected during this investigation will be packaged and shipped in accordance with CDM SOP 2-8 Packaging and Shipping of Environmental Samples (Appendix B), with modification. The following modifications to SOP 2-8 have been reviewed and approved.

Section 4.0, Required Equipment - No vermiculite or other absorbent material will be used. No bubble wrap or ice will be used.

Section 5.0, Procedures - Lining the cooler with a garbage bag is determined not to be necessary since the samples will already be double-bagged. Procedures related to the packaging of bottles do not apply. No vermiculite or other absorbent material will be used to pack the samples. No ice will be used.

4.4.6 Quality Control Samples

Quality control data are necessary to determine precision and accuracy of sample collection techniques and to demonstrate the absence of interference and/or cross-contamination. For this investigation, a waste/product QC sample will consist of a duplicate taken from an environmental sample in the field following homogenization in the zipper-top bag.

Waste/product duplicate samples will be analyzed at a rate of one per twenty waste/product samples per site (i.e., 5 percent). For each group of twenty sequentially collected natural samples (e.g., 2R8-0020 through 2R8-0040), any one of the twenty samples may be duplicated. The sample will receive a unique index identification code as described in Section 4.4.2.

Split samples may be collected when waste/product samples are collected on property owned (or once owned) by Vermiculite Intermountain (Table 1-1). Split samples may be collected for 100 percent of samples collected on these properties. A split sample will be collected in the same manner as a duplicate sample using a unique index identification code. However, the sample will not be sent to the Denver laboratory for processing and subsequent analysis. A COC form will be completed without identifying any analyses or laboratory. The COC will identify the sample that was split as noted in the comment section. The samples, signed COC, and corresponding field data sheets will be transferred to the stakeholder's representative. A copy of the signed COC will be retained for the project records.

No other waste/product QC samples (e.g., field blanks, interlaboratory splits, etc.) are planned. Rinsate samples are used to evaluate the effectiveness of decontamination procedures. The soil analyses used for this project have a relatively high limit of detection and cross-contamination from sampling equipment would have to be extreme to be detectable in a sample. Decontamination of equipment to be visually

clean is sufficient to avoid cross-contamination and, therefore, no rinsate blanks will be collected.

4.4.7 Equipment Decontamination

Equipment used to collect, handle, or measure waste/product samples will be decontaminated in accordance with CDM SOP 4-5 Field Equipment Decontamination at Nonradioactive Sites, with modification (Appendix B). The following modifications to SOP 4-5 have been reviewed and approved:

Section 5.0, Procedures - Decontamination water will not be captured and will be discharged to the ground at the site.

Section 5.3, Sampling Equipment Decontamination - ASTM Type II DI water will not be used. Rather, locally available DI water will be used. Decontamination water will be discharged to the ground at the site.

Section 5.6, Waste Disposal - Decontamination water will not be captured and will not be packaged, labeled, or stored as investigation-derived waste.

The decontamination procedure for non-disposable equipment will consist of a tap water and alconox wash with brush scrubbing, followed by a tap water rinse, and final DI water rinse. The equipment will then allowed to air-dry before being wrapped in clean plastic or aluminum foil. All equipment will be decontaminated before coming into contact with any sample. Rinse water will be discharged to the ground at the site. Any deviations from the decontamination procedures will be recorded in the appropriate field logbook.

4.4.8 Health and Safety

All sampling will be performed in accordance with all applicable EPA, OSHA, corporate, and site health and safety requirements. CDM has prepared a SHSP for the site that is attached as Appendix C.

4.5 Microvacuum Dust Sampling

4.5.1 Selecting Sample Locations

Microvac sampling ~~may be recommended at the site~~ will be conducted at the site and on adjacent properties. Microvacuum (dust sampling) locations will be determined based on the size and number of buildings on the project site, current and historic uses of the buildings, and current and historic site conditions. In the case of multiple story buildings or larger buildings, it may be necessary to collect additional microvacuum dust samples to get a more representative sample of the buildings.

UPL Bldg
Artistic Printing
Utah Paper Box Co.
Others?

The specifics of the dust sampling locations will be determined on site. The Volpe Center Field Team Member working with the sampling team will determine the number and location of microvacuum dust samples to be collected at this site.

4.5.2 Sample Identification

Each dust sample will be identified with a unique index identification code. The index identification code is a sequential list of sample numbers that will be used for all of the samples collected including soil, air, dust and bulk samples. This coding system is designed to prevent accidental duplication of sample identification numbers and ensures that all samples have a unique identification number assigned to them. To ensure that the laboratory is "blind" and does not receive certain specific information about a sample, only the index identification code, along with sample date and time, will be used to label sample cassettes.

Each dust sample will also be identified by a site identifier, a location identifier, a media identifier, and a station identifier, and a sequential number indicating the number of sample from that building.

An example is LSS-UTSL-DU-B01-3-00 which indicates that a sample was collected by CDM as part of the Libby Sister Sites asbestos investigation (LSS), that it was collected from the former facility in Salt Lake City, UT (UTSL), that it was a dust sample (DU), from building 01 (B01), that it was the third sample from that building (3), and space filler to keep the number of characters in the sample code consistent (00). The first letter of the location identifier will be changed to an F for field blanks. This coding system may be modified to suit field conditions and any modifications will be clearly described in the applicable field logbook.

4.5.3 Collecting Samples

Microvacuum dust samples will be collected by drawing air through a mixed cellulose ester (MCE) filter (0.45 μm pore size) at a flow rate of 2.0 L/min for a minimum sampling time of two minutes or until all visible dust or particulate matter has been removed from the sampling area, whichever comes first. The details of the method are provided in ASTM Standard D-5755-95, Microvacuum Sampling and Indirect Analysis Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations (Appendix D). For the purposes of this project there will be one modification to the ASTM Method. The following modification to ASTM Method D-5755-95 is noted:

Section 8.7, Sample Area - The ASTM method indicates that a 100 cm^2 sampling area be vacuumed per cassette. In order to obtain a more representative dust sample from several areas within each building, three separate 100 cm^2 sampling areas per sampling cassette will be vacuumed. Therefore each cassette will represent the dust from a 300 cm^2 area.

4.5.4 Sample Documentation

Sampling activities during this assessment will be documented in the applicable field logbooks and on FSDSs (Appendix A) to be maintained by the field team in accordance with CDM SOP 4-1 Field Logbook Content and Control (Appendix B). The field team leader will be responsible for maintenance and document control of field logbooks.

4.5.5 Sample Custody, Packaging, and Shipping

This section details the sample custody and the classifying, identifying, labeling, packaging, and transporting of dust samples collected during this investigation.

Sample classification is necessary to ensure the protection of personnel involved in the shipment of samples, and to maintain the integrity of each sample. Dust samples collected during this assessment will be classified as environmental samples.

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, COC records will be used. The COC record will be employed as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. COC procedures will follow the requirements set forth in CDM SOP 1-2 Sample Custody, with modifications (Appendix B). The following modifications to SOP 1-2 have been reviewed and approved:

Section 5.2, Sample Labels and Tags - A label will be affixed to each air sampling cassette prior to being shipped to the appropriate laboratory. This number will correspond to the number assigned to that particular sample in the field data sheets.

Samples collected during this investigation will be packaged and shipped in accordance with CDM SOP 2-8, Packaging and Shipping of Environmental Samples (Appendix B) and ASTM Standard D-5755-97 (Appendix D), with modification. The following modifications to SOP 2-8 are as follows:

Section 4.0, Required Equipment - No vermiculite or other absorbent material will be used. No bubble wrap or ice will be used.

4.5.6 Quality Control Samples

Quality control methods include both a field and laboratory component. Normally, field personnel will prepare two types of QC samples: duplicates and blanks. However, field duplicates will not be collected for microvacuum samples. In accordance with the ASTM standard, a microvacuum sample must be collected for two minutes or until all visible dust or particulate has been removed from a specified area. Therefore, it may be impossible to duplicate the sampling of dust.

Field Blanks

The field team will prepare blank samples for dust by labeling unused filter cassettes and submitting them for analysis.

4.5.7 Equipment Decontamination

This project requires the decontamination of all microvacuum sampling equipment (e.g., pumps, cassette, tubing, etc) prior to sampling and prior to leaving the site.

Equipment used to collect, handle, or measure dust samples will be decontaminated in accordance with CDM SOP 4-5 Field Equipment Decontamination at Nonradioactive Sites, with modification (Appendix B). The following modifications to SOP 4-5 have been reviewed and approved:

Section 5.0, Procedures - Decontamination water will not be captured and will be discharged to the ground at the site.

Section 5.3, Sampling Equipment Decontamination - ASTM Type II DI water will not be used. Rather, locally available DI water will be used. Decontamination water will be discharged to the ground at the site.

Section 5.6, Waste Disposal - Decontamination water will not be captured and will not be packaged, labeled, or stored as investigation-derived waste.

The decontamination procedure for non-disposable equipment will consist of a tap water and alconox wash with brush scrubbing, followed by a tap water rinse, and final DI water rinse. The equipment will then be allowed to air-dry before being wrapped in clean plastic or aluminum foil. All equipment will be decontaminated before coming into contact with any sample. Rinse water will be discharged to the ground at the site. Any deviations from the decontamination procedures will be recorded in the appropriate field logbook.

4.5.8 Health and Safety

All sampling will be performed in accordance with all applicable EPA, OSHA, corporate, and site health and safety requirements. CDM has prepared a SHSP for the project site that is attached as Appendix C.

4.6 Ambient Air

4.6.1 Selecting Sample Locations

Ambient air sampling locations will be determined based on the size and number of buildings on the project site, current and historic uses of the buildings, and current and historic site conditions. Once the equipment has been removed from the buildings, ambient air sampling will be performed to determine the asbestos in air concentrations within the buildings. Ambient air samples may be collected from buildings formerly used for processing the vermiculite ore.

Perimeter air sampling / monitoring will be unnecessary. How about PAS on field Team during time of completion?

Due to limited knowledge of the project site, the specifics of the air sampling locations will be determined on site. The Volpe Center Field Team Member working with the sampling team will determine the number and locations of ambient air samples to be collected at this site.

4.6.2 Sample Identification

Each air sample will be identified with a unique index identification code. The index identification code is a sequential list of sample numbers that will be used for all of the samples collected including soil, air, waste/product, and dust samples. This coding system is designed to prevent accidental duplication of sample identification numbers and ensures that all samples have a unique identification number assigned to them. To ensure that the laboratory is "blind" and does not receive certain specific information about a sample, only the index identification code, along with sample date and time, will be used to label sample cassettes.

Each ambient air sample will also be identified by a site identifier, a location identifier, a media identifier, a station identifier, and the height from ground surface of sample collection, in inches.

An example is LSS-UTSL-AA-B02-2-72 which indicates that a sample was collected by CDM as part of the Libby Sister Sites asbestos investigation (LSS), that it was collected from the former facility in Salt Lake City, UT (UTSL), that it was an ambient air sample (AA), from building 02 (B02), second sample from that building (2), and that it was collected from 72 inches above ground surface (72). The first letter of the location identifier will be changed to an F for field blanks. This coding system may be modified to suit field conditions and any modifications will be clearly described in the applicable field logbook.

4.6.3 Collecting Samples

Ambient air samples will be collected by drawing air through a MCE filter (0.45 μm pore size) at a specified flow rate for a specified period of time. The details of the method are provided in EPA SOP 2015 Asbestos Sampling (Appendix D). Under normal circumstances, ambient air samples will be collected at a flow rate of 10 L/min over a 6- to 7-hour sampling period. This results in a total sampling volume 4200 liters.

Depending on the sampling conditions, work activities, the level of asbestos in the air, and the level of interfering particles in the air, the flow rate, total sampling time, and/or sampling volume may require modifications. The decision to modify the flow rate, time, or volume will be made by the Volpe Center Field Team Member working with the sampling team.

4.6.4 Sample Documentation

Sampling activities during this removal action will be documented in the applicable field logbooks (and on FSDSs, see Appendix A) to be maintained by the field team in accordance with CDM SOP 4-1 Field Logbook Content and Control (Appendix B). The field team leader will be responsible for maintenance and document control of field logbooks.

4.6.5 Sample Custody, Packaging, and Shipping

This section details the sample custody and the classifying, identifying, labeling, packaging, and transporting of air samples collected during this investigation.

Sample classification is necessary to ensure the protection of personnel involved in the shipment of samples, and to maintain the integrity of each sample. Air samples collected during this assessment will be classified as environmental samples.

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, COC records will be used. The COC record will be employed as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. COC procedures will follow the requirements set forth in CDM SOP 1-2 Sample Custody, with modifications (Appendix B). The following modifications to SOP 1-2 have been reviewed and approved:

Section 5.2, Sample Labels and Tags - A label will be affixed to each air sampling cassette prior to being shipped to the appropriate laboratory. This number will correspond to the number assigned to that particular sample in the field data sheets.

Samples collected during this investigation will be packaged and shipped in accordance with CDM SOP 2-8 Packaging and Shipping of Environmental Samples (Appendix B) and ASTM Standard D-5755-97 (Appendix B), with modification. The following modifications to SOP 2-8 have been reviewed and approved:

Section 4.0, Required Equipment - No vermiculite or other absorbent material will be used. No bubble wrap or ice will be used.

4.6.6 Quality Control Samples

The field team will prepare one type of QC sample: field blanks.

Field Blanks

The field team will prepare blank samples for air by labeling unused filter cassettes and submitting them for analysis.

4.6.7 Equipment Decontamination

This project requires the decontamination of all air sampling equipment (e.g., pumps, cassette, tubing, etc) prior to sampling and prior to leaving the site.

Equipment used to collect, handle, or measure air samples will be decontaminated in accordance with CDM SOP 4-5 Field Equipment Decontamination at Nonradioactive Sites, with modification (Appendix B). The following modifications to SOP 4-5 have been reviewed and approved:

Section 5.0, Procedures - Decontamination water will not be captured and will be discharged to the ground at the site.

Section 5.6, Waste Disposal - Decontamination water will not be captured and will not be packaged, labeled, or stored as investigation-derived waste.

The decontamination procedure for non-disposable equipment consists of a tap water and alconox wash with brush scrubbing, followed by a tap water rinse, and final DI

water rinse. The equipment will then be allowed to air-dry before being wrapped in clean plastic or aluminum foil. All equipment will be decontaminated before coming into contact with any sample. Rinse water will be discharged to the ground at the site. Any deviations from the decontamination procedures will be recorded in the appropriate field logbook.

4.6.8 Health and Safety

All sampling will be performed in accordance with applicable EPA, OSHA, corporate, and site health and safety requirements. CDM has prepared a SHSP that is specific to this project attached as Appendix C.

Section 5
Laboratory Analytical Methods

All soil and waste/product samples will be sent to the following location for sample preparation:

CDM Laboratory
2710 Walnut Street
Denver, Colorado 80202
Attn: Todd Burgesser
(303)295-3935

All soil and waste/product samples will be processed in accordance with the CDM Close Support Facility Soil Preparation Plan (CDM 2003b) (Appendix D). Following preparation, all soil and waste/product will be analyzed by PLM/NIOSH 9002 (Appendix D). ~~Removal decisions~~ will be based on the fine ground sample portion analytical result.

Any air and dust samples will be sent directly to the analytical laboratory and will not require any preliminary processing at the CDM Laboratory. Analytical services for soil, waste/product, dust, and air samples will be conducted by one of the following laboratories:

EMSL Analytical Inc.
107 Haddon Avenue
Westmont, NJ 08108
Attn: Mr. Robert DeMalo
(800) 220-3675 ext. 1256

? how to separately handle/process PCB samples ?

Reservoir Environmental Services Inc.
1827 Grant Street
Denver, CO 80203
Attn: Ms. Jeanne Orr
(303) 830-1986

The most appropriate analytical methods for each environmental medium will depend on the type and level of asbestos contamination and on the detection levels needed to assess hazard and/or nature and extent of contamination. Table 5-1 identifies the analytical methods that will be used during the assessment. Analytical methods are included as Appendix D.

The laboratory used for all sample analysis will be accredited under the Laboratory Accreditation Program as sponsored by the American Industrial Hygiene Association

(AIHA). The laboratory will also actively participate in the NIOSH Proficiency Analytical Testing Program for Laboratory Quality Control for asbestos. Lastly, the laboratory will be fully accredited for TEM and PLM analysis under the National Voluntary Laboratory Accreditation Program as sponsored by the National Institute of Standards and Technology (NIST).

Section 6
Quality Assurance / Quality Control

Because the results of the sampling covered by this SAP will be used for decisions made during focused preliminary assessments and are not intended for future decisions regarding remedial actions or risk, a moderate level of QA/QC is warranted.

Field QA/QC requirements are identified in Section 4.0. Laboratory QA/QC requirements are identified in the general laboratory quality assurance plan maintained by the selected laboratory.

6.1 Instrument Calibration and Frequency

No field measurements will be made; therefore, no calibration of field equipment will be necessary.

Laboratory instrumentation, used for sample analyses, will be calibrated in accordance with USEPA or NIOSH methodologies. Calibrations must be acceptable before any measurements on investigative samples are conducted. Traceable calibration standards are obtained by the analytical laboratories. All documentation relating to receipt, preparation, and use of standards will be recorded in the appropriate laboratory logbooks. This information will be forwarded as part of the analytical data package as described in Section 7.0.

6.2 Assessment and Response Actions

The following sections describe activities for assessing the effectiveness of the implementation of the project and associated QA/QC. The purpose of the appraisal is to ensure that the SAP is implemented as prescribed. At this time, no audits or self-assessments are scheduled for this project; however, in case they do occur, their elements are described in the following sections.

6.2.1 Audits / Self-Assessments

Evaluation of office and field activities and laboratory analyses may be conducted through oversight of analytical procedures through project audits or self-assessments. Project self-assessments are reviews of projects or examination of project activities conducted by technical personnel who are knowledgeable in the project-specific requirements, whether the requirements involve office, field, or laboratory work.

Audits/self assessments are conducted to ensure that the technical requirements of the projects are being met. Office audits/self assessments are conducted to ensure that document control, and other QA requirements are being met. The purpose of the field project audit/self assessments is to document field sampling and analysis

procedures, to determine if activities are proceeding in accord with project requirements, and to document any changes, additions, or deletions that have occurred during field sampling and analysis and to provide rapid feedback to the project staff and to facilitate corrective action and continuous improvement.

Laboratory audits/self assessments evaluate laboratory procedures to ensure that they follow Good Laboratory Practices (GLP) Guidelines and to ensure that they do not conflict with project requirements. If conflicts are noted, these must be addressed so that project requirements are met.

Other possible audits/self assessments that may be carried out over the course of the project including:

- Review and verification of procedures followed as part of real-time control charting of QC samples analyzed via field and contract laboratory procedures
- Evaluation of the flow of electronic data
- Review and verification of hardcopy data

Audits/self assessments may review the data flow, verify data entry procedures, and evaluate whether data management QC protocols will be observed. If audits/self assessments resulting from review of any of the procedures reveal that project requirements are not met, then an improvement plan (Figure 6-1) or corrective action for the deficiency must be requested, reviewed, and reported. Results for all audits or self-assessments will be submitted to the corporate QA director identified on the signature page of this document. Information in the reports includes:

- Type of project audit/self assessment (field, office, laboratory, data management, etc.)
- Date of audit/self assessment
- Summary of situation or procedures reviewed
- Results of the audit/self assessment and plan of action describing any non-conformances noted
- Corrective action request(s) (CAR) or improvement plan, if non-conformance noted
- Date by which CAR or improvement plan action must be received with response and any necessary documentation

If a CAR or improvement plan is required, a follow-up verification must be performed within 20 working days upon receipt of the CAR or improvement plan response to

ensure that corrective actions were implemented. More detailed information regarding corrective action procedures is provided in the next section.

6.2.2 Corrective Action Procedures

Two types of corrective actions may result from project audits/self assessments: immediate and long-term. Immediate corrective actions include correcting deficiencies or errors or correcting inadequate procedures. Long-term corrective actions are designed to eliminate the sources of deficiencies or errors. If either type of corrective action is deemed necessary following a project audit/self assessment, each step in the following procedures must be documented:

- Identify the deviation or deficiency
- Request a corrective action
- Report the problem through a CAR or through an improvement plan to the QA director
- Review the corrective action response
- Perform a follow-up verification to ensure the deviation is not recurring

Section 7
Data Reporting and Deliverables

Following completion of analysis for each sample delivery group (SDG), the laboratory will prepare a report that will include a tabulation of all sample results, COC forms, and laboratory QA/QC analyses pertinent to that SDG. The laboratory will fax or deliver the report to appropriate CDM personnel. The laboratory will also submit an electronic copy of the data results to CDM.

Final laboratory reports will be provided to CDM that include all sample results, necessary narratives, replicate analyses, continuing calibration results (if available), and any other QC results associated with the analyses.

Following completion of all field activities and receipt of all final SDGs, CDM will prepare a draft RA report for the former Vermiculite Intermountain site. The draft RA will include a brief description of the field program, laboratory test results, maps showing the locations and concentrations of the samples collected, assessment of the DQOs, and any deviations from the SAP. Copies of the laboratory results will be attached as an appendix. Three copies of each draft RA will be submitted to the Volpe Center task order contracting officer's technical representative (TO COTR) for review and comment:

Project Manager
US/DOT/RSPA/Volpe Center
Attn: John McGuiggin, PE
55 Broadway, Kendall Square
Cambridge, MA 02142
Ph: (617)494-2574
Fax: (617)494-2789
Cell: (617)320-4164
Email: mcguiggin@volpe.dot.gov

Any comments received will be addressed and five copies of the final RA will be issued to the TO COTR.

Section 8
References

ACGIH 1998, 1998 TLVs® and BEIs®, American Conference of Governmental Industrial Hygienists, Inc., Publication 0098.

CDM 2001. Draft letter to Mr. John McGuiggin dated May 11, 2001 re: Libby Sister Site Walk-through at Former W.R. Grace Facility, Salt Lake City, UT on March 27, 2001.

CDM 2003a. Letter Report Summarizing Sampling Activities at Former Vermiculite Intermountain Facility - SLC2. Revision 1, January.

CDM. 2003b. Close Support Facility Soil Preparation Plan, Libby Asbestos Site, Operable Unit 4. April 25

EPA 1987. Asbestos Hazard Emergency Response Act of 1986. 52 FR 41846, Codified at 40 CFR 763.

EPA 1990. Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance. EPA 340/1-90-018. December.

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Figures

Color Photo(s)

The following pages contain color that does not appear in the scanned images.

To view the actual images, please contact the Superfund Records Center at (303) 312-6473.

Figure 2-1

Libby Sister Site

Vermiculite Intermountain Facility
Sisters of Libby
Salt Lake City, UT-SLC2

Legend

Approximate Boundary of Former Processing Building

Utah Power & Light Property

UTA TPS unit is located on leased UPL parcel. Therefor, UTA parcel should be included in 'red' zone.

N
W E
S

Feet
0 100 200 400

CDM

Mapfilename: Figure2-1SLC2.mxd

Figure 6-1 Improvement Plan

CDM FEDERAL PROGRAMS CORPORATION
IMPROVEMENT PLAN

Project No./Title: _____

Client/Contract: _____

Project Manager: _____ QA Coordinator: _____

Situation (Attach Additional Pages as Required):

Situation Identified By: _____ Date: _

Plan of Action (Attach Additional Pages as Required):

Responsible for Action: _____

Scheduled Completion Date: _____

Actual Completion Date: _____

Project Manager Signature: _____ Date: _____

Tables

Table 4-1 Supply Checklist

Note: This supply and equipment list should be used in addition to the list found in the specific SOPs.

General

SAP
SOPs
HASP
Access agreement
Sample labels/tags/pens
Permanent markers
Field book
Pin flags
Digital camera
Garbage bags
100-foot tape measure
GPS unit
Cellular phone
File box
Color pencils
Express shipping labels
Field forms (COCs and Data Sheets)
Tool kit
1-gallon zipper-top bags

Equipment Decontamination/Personal Protective Equipment

Rubber overboots
Tyvek coveralls
Liquid soap
Disposable gloves
Respirators w/cartridges (see HASP)
Duct tape
respirator cleaning kit
5-gallon water-boy
paper towels
safety glasses
eye wash kit
first aid kit
tap water
garden sprayer
long-handle brush
aluminum foil
tubs for decontamination

Soil and Waste/Product

bulb planting tool, trowel, or other sampling
site maps
wood stakes
300-ft measuring tape
flagging
plastic sheeting

Air and Dust Sampling

high-volume sample pumps (2-12L/min)
low-volume sample pumps
tygon tubing
sample stands
air-flow calibrator
tubing/cassett adaptors
shrink-wrap
extension cord
50 filter cassettes (0.45 um, MCE filter)
air sampling forms
filter cassettes
tyvek
metric ruler
filter paper
8 1/2 x 11 plastic sheets
masking tape
tape measure
flash light w/batteries
ear plugs
magnifying glass
disposable hand cleaners
100 cm^2-template

Table 5-1 Summary of Analytical Methods

Matrix	Analysis	Holding Time	Analytical Method
Soil	Preparation Asbestos (bulk) by PLM	6 months	CDM 2003 NIOSH Method 9002
Waste/ Product	Preparation Asbestos (bulk) by PLM	6 months	CDM 2003 NIOSH Method 9002
Dust	International Standard, *Determination of asbestos fibers*	6 months	ISO 10312
Air *personal*	Asbestos and Other Fibers by PCM	6 months	NIOSH 7400
Air ambient	AHERA	6 months	EPA 40 CFR Part 763 Final Rule (AHERA)

See Appendix D for methods.

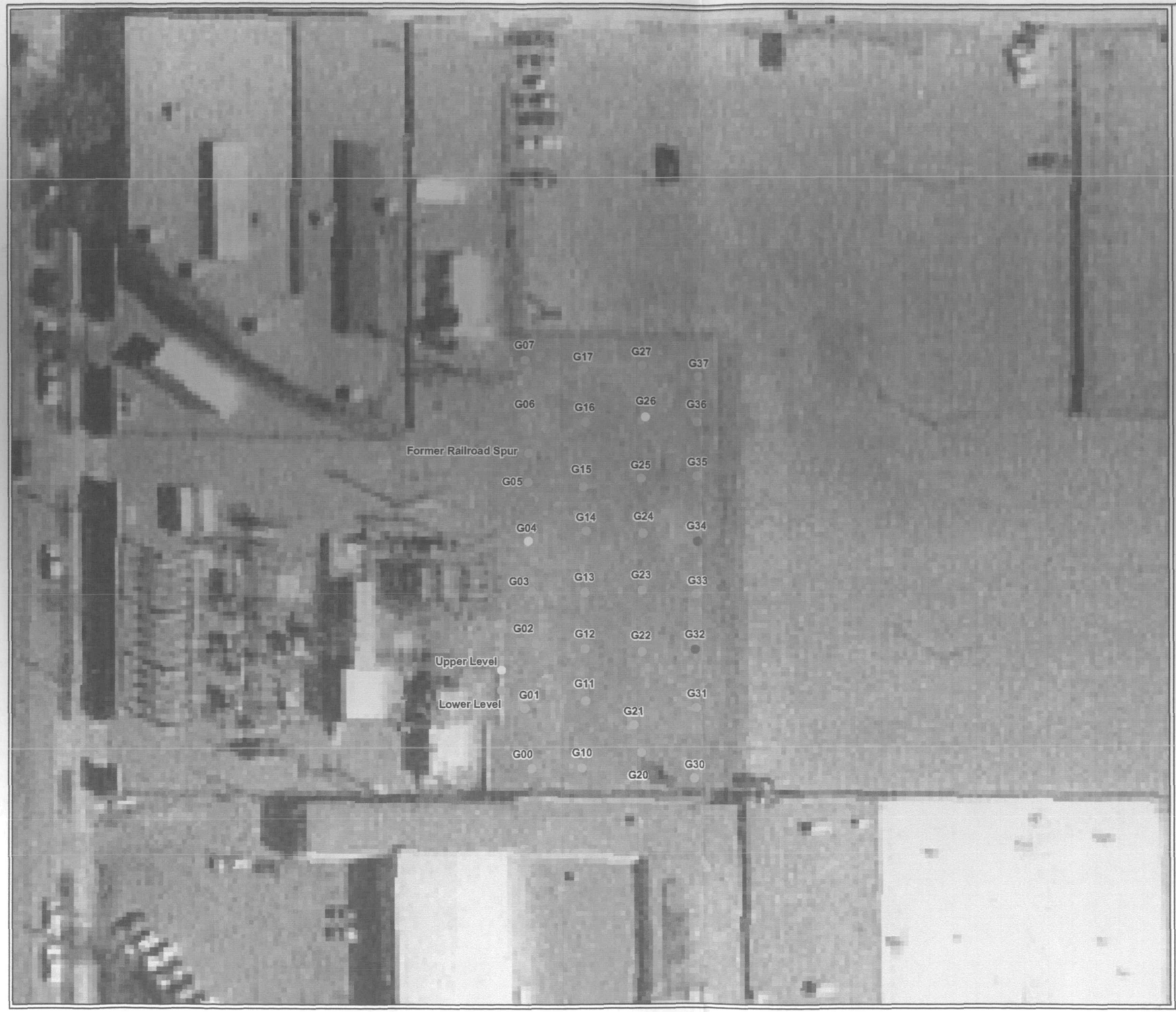

Figure 1-1

Surface Soil Sample Results
(0 to 2 Inches)

Sisters of Libby - Salt Lake City, Utah

Legend
PLM Analysis
Tremolite-Actinolite %

- 0
- <=1
- 2 - 3
- 4
- >5

Draft

N
W E
S

Feet
0 25 50 100

CDM

Mapfilename: SLC2SampleResults0-2

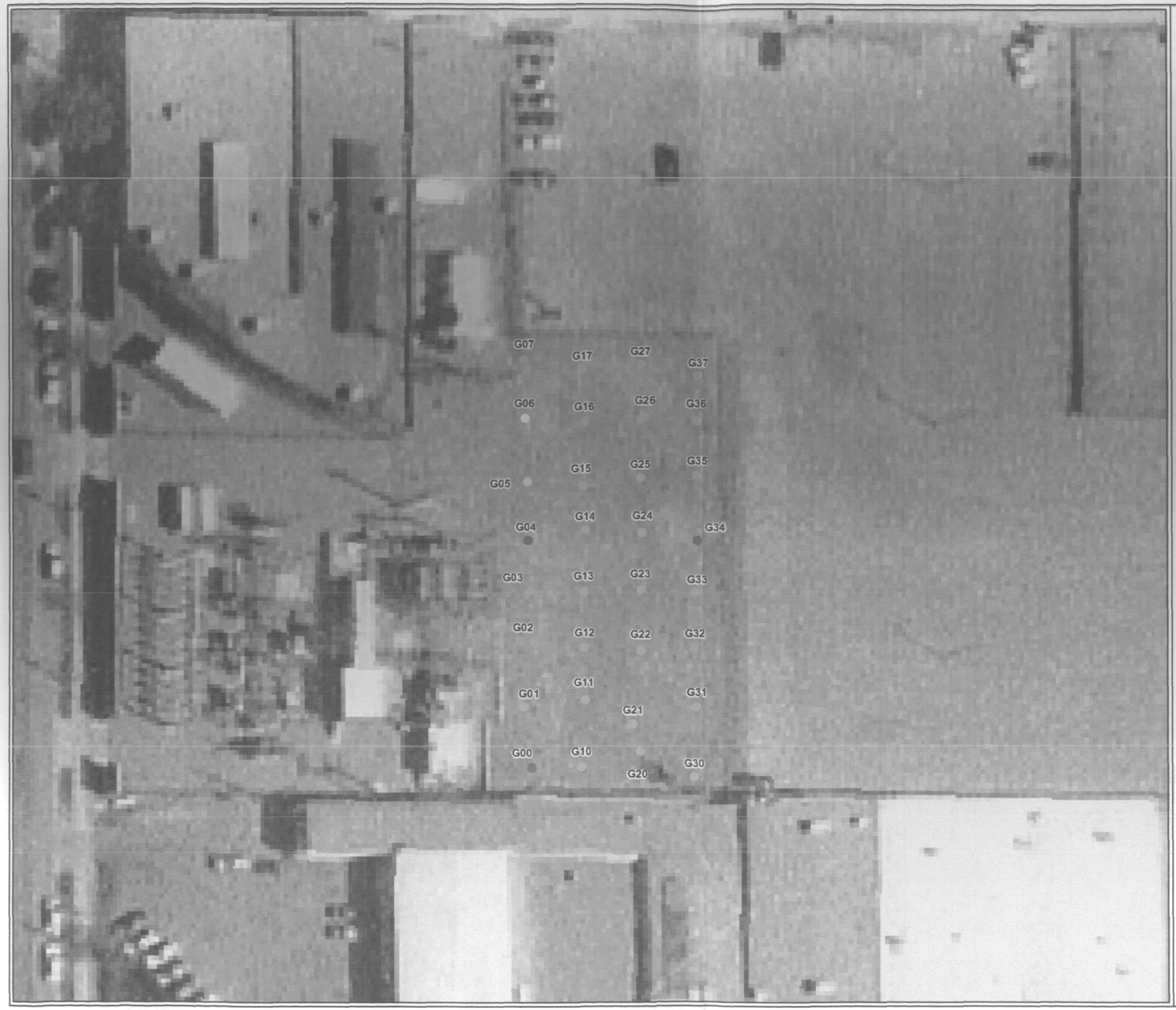

Figure 1-2

Subsurface Soil Sample Results
(2 to 6 Inches)

Sisters of Libby - Salt Lake City, Utah

Legend
PLM Analysis
Tremolite-Actinolite %

- 0
- <=1
- 2 - 3
- 4
- >5

Draft

N
W E
S

Feet
0 25 50 100

CDM

Mapfilename: SLC2SampleResults2-6

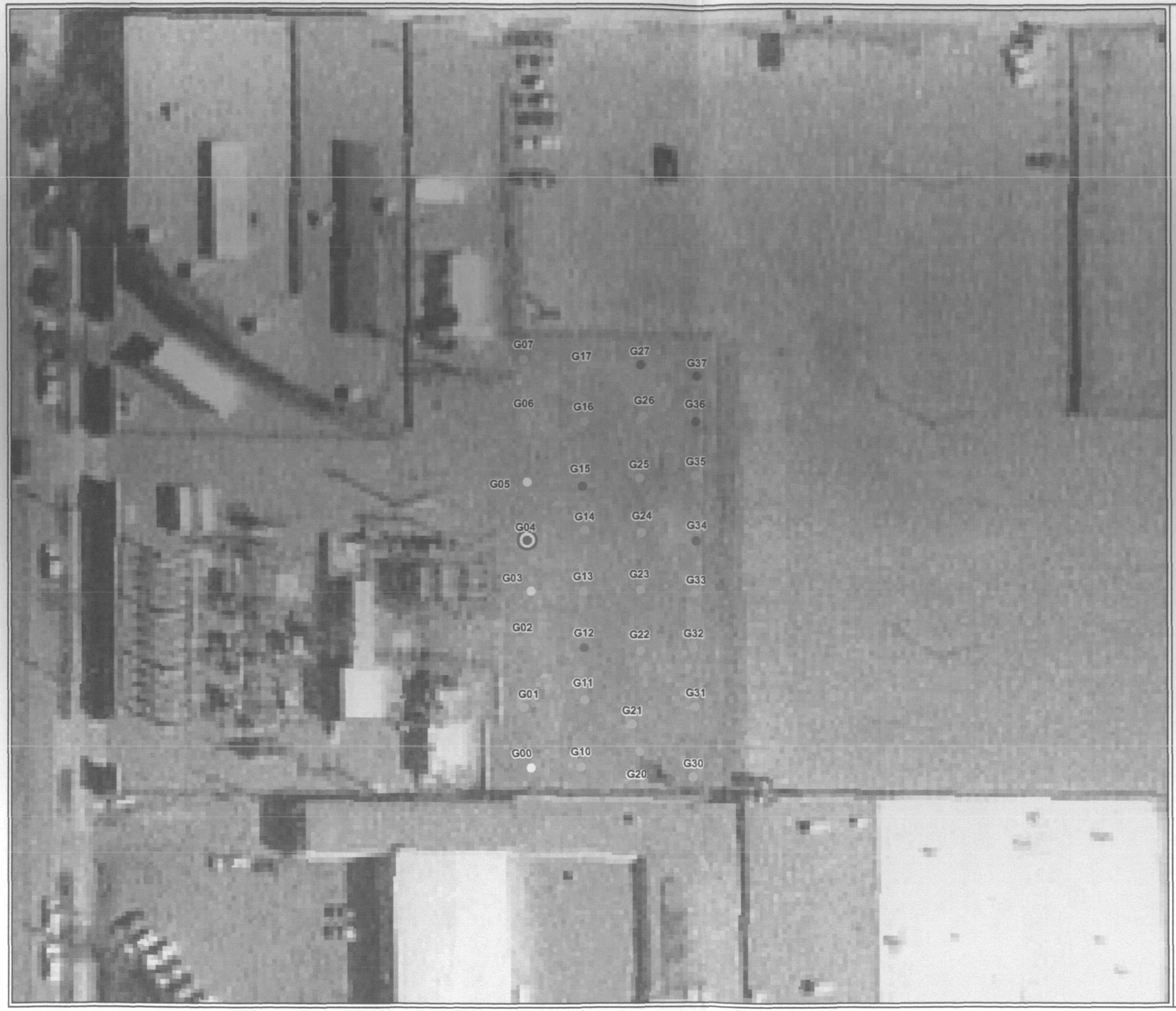

Figure 1-3

Subsurface Soil Sample Results
(6 to 12 Inches)

Sisters of Libby - Salt Lake City, Utah

Legend
PLM Analysis
Tremolite-Actinolite %

- 0
- <=1
- 2 - 3
- 4
- >5

Subsurface Soil (36 - 42 Inch Depth)

- >5

Refusal at 9.5 feet, product full length
(1 foot offset south of G04)

Draft

N
W E
S

Feet
0 25 50 100

CDM

Mapfilename: SLC2SampleResults6-12

Soil Sample Analytical Data by PLM for Salt Lake City Sister Site, SLC2.

Index ID	Location	Date Received	Date Analyzed	Depth (inches)	Category	Type Sample	X COORD	Y COORD	Lab ID	Appearance	Analytical Method	Q Tr-Ac	Tremolite Actinolite	Q Ch	Chrysotile
1R8-3001	G00	10/28/2002	10/29/2002	0-2	FS	Grab	1529160.55024000000	7448075.41724000000	735606	Brown soil	NIOSH 9002	<	1	<	1
1R8-3002	G00	10/28/2002	10/29/2002	2-6	FS	Grab	1529160.55024000000	7448075.41724000000	735607	Brown soil	NIOSH 9002			<	1
1R8-3003	G00	10/28/2002	10/29/2002	6-12	FS	Grab	1529160.55024000000	7448075.41724000000	735608	Brown soil	NIOSH 9002		2	<	1
1R8-3004	G01	10/28/2002	10/29/2002	0-2	FS	Grab	1529157.68500000000	7448101.66152000000	735609	Brown soil	NIOSH 9002	<	1	ND	
1R8-3005	G01	10/28/2002	10/29/2002	2-6	FS	Grab	1529157.68500000000	7448101.66152000000	735610	Brown soil	NIOSH 9002	<	1	ND	
1R8-3006	G01	10/28/2002	10/29/2002	6-12	FS	Grab	1529157.68500000000	7448101.66152000000	735611	Brown soil	NIOSH 9002	<	1	ND	
1R8-3007	G02	10/28/2002	10/29/2002	0-2	FS	Grab	1529162.61407000000	7448129.49092000000	735612	Brown soil	NIOSH 9002	<	1	ND	
1R8-3008	G02	10/28/2002	10/29/2002	2-6	FS	Grab	1529162.61407000000	7448129.49092000000	735613	Brown soil	NIOSH 9002	<	1	ND	
1R8-3009	G02	10/28/2002	10/29/2002	6-12	FS	Grab	1529162.61407000000	7448129.49092000000	735614	Brown soil	NIOSH 9002	<	1	ND	
1R8-3010	G03	10/28/2002	10/29/2002	0-2	FS	Grab	1529160.74697000000	7448152.29260000000	735615	Brown soil	NIOSH 9002	<	1	ND	
1R8-3011	G03	10/28/2002	10/29/2002	2-6	FS	Grab	1529160.74697000000	7448152.29260000000	735616	Brown soil	NIOSH 9002	<	1	ND	
1R8-3012	G03	10/28/2002	10/29/2002	6-12	FS	Grab	1529160.74697000000	7448152.29260000000	735617	Brown soil	NIOSH 9002		3	ND	
1R8-3013	G04	10/28/2002	10/29/2002	0-2	FS	Grab	1529159.13335000000	7448174.41441000000	735618	Brown soil	NIOSH 9002		3	ND	
1R8-3014	G04	10/28/2002	10/29/2002	2-6	FS	Grab	1529159.13335000000	7448174.41441000000	735619	Brown soil	NIOSH 9002		12	ND	
1R8-3015	G04	10/28/2002	10/29/2002	6-12	FS	Grab	1529159.13335000000	7448174.41441000000	735620	Brown soil	NIOSH 9002		15	ND	
1R8-3100	G04	10/28/2002	10/29/2002	36-42	FS	Grab	1529159.13335000000	7448174.41441000000	735705	Brown soil	NIOSH 9002		18	ND	
1R8-3016	G05	10/28/2002	10/29/2002	0-2	FS	Grab	1529159.08742000000	7448199.97886000000	735621	Brown soil	NIOSH 9002	<	1	ND	
1R8-3017	G05	10/28/2002	10/29/2002	2-6	FS	Grab	1529159.08742000000	7448199.97886000000	735622	Brown soil	NIOSH 9002		4	ND	
1R8-3018	G05	10/28/2002	10/29/2002	6-12	FS	Grab	1529159.08742000000	7448199.97886000000	735623	Brown soil	NIOSH 9002		2	<	1
1R8-3019	G06	10/28/2002	10/29/2002	0-2	FS	Grab	1529158.09646000000	7448227.69226000000	735624	Brown soil	NIOSH 9002	<	1	ND	
1R8-3020	G06	10/28/2002	10/29/2002	2-6	FS	Grab	1529158.09646000000	7448227.69226000000	735625	Brown soil	NIOSH 9002		2	ND	
1R8-3021	G06	10/28/2002	10/29/2002	6-12	FS	Grab	1529158.09646000000	7448227.69226000000	735626	Brown soil	NIOSH 9002	<	1	ND	
1R8-3022	G07	10/28/2002	10/29/2002	0-2	FS	Grab	1529157.81215000000	7448253.20613000000	735627	Brown soil	NIOSH 9002	<	1	ND	
1R8-3023	G07	10/28/2002	10/29/2002	2-6	FS	Grab	1529157.81215000000	7448253.20613000000	735628	Brown soil	NIOSH 9002	<	1	ND	
1R8-3024	G07	10/28/2002	10/29/2002	6-12	FS	Grab	1529157.81215000000	7448253.20613000000	735629	Brown soil	NIOSH 9002	<	1	ND	
1R8-3025	G17	10/28/2002	10/29/2002	0-2	FS	Grab	1529183.18065000000	7448249.28638000000	735630	Brown soil	NIOSH 9002	<	1	ND	
1R8-3026	G17	10/28/2002	10/29/2002	2-6	FS	Grab	1529183.18065000000	7448249.28638000000	735631	Brown soil	NIOSH 9002	<	1	ND	
1R8-3027	G17	10/28/2002	10/29/2002	6-12	FS	Grab	1529183.18065000000	7448249.28638000000	735632	Brown soil	NIOSH 9002	<	1	ND	
1R8-3028	G16	10/28/2002	10/29/2002	0-2	FS	Grab	1529184.20313000000	7448226.34281000000	735633	Brown soil	NIOSH 9002	<	1	ND	
1R8-3029	G16	10/28/2002	10/29/2002	2-6	FS	Grab	1529184.20313000000	7448226.34281000000	735634	Brown soil	NIOSH 9002	<	1	ND	
1R8-3030	G16	10/28/2002	10/29/2002	6-12	FS	Grab	1529184.20313000000	7448226.34281000000	735635	Brown soil	NIOSH 9002	<	1	ND	
1R8-3031	G15	10/28/2002	10/29/2002	0-2	FS	Grab	1529183.19428000000	7448198.20745000000	735636	Brown soil	NIOSH 9002	<	1	ND	
1R8-3032	G15	10/28/2002	10/29/2002	2-6	FS	Grab	1529183.19428000000	7448198.20745000000	735637	Brown soil	NIOSH 9002	<	1	<	1
1R8-3033	G15	10/28/2002	10/29/2002	6-12	FS	Grab	1529183.19428000000	7448198.20745000000	735638	Brown soil	NIOSH 9002		12	ND	
1R8-3034	G14	10/28/2002	10/29/2002	0-2	FS	Grab	1529184.39506000000	7448179.01794000000	735639	Brown soil	NIOSH 9002	<	1	ND	
1R8-3035	G14	10/28/2002	10/29/2002	2-6	FS	Grab	1529184.39506000000	7448179.01794000000	735640	Brown soil	NIOSH 9002	<	1	ND	
1R8-3036	G14	10/28/2002	10/29/2002	6-12	FS	Grab	1529184.39506000000	7448179.01794000000	735641	Brown soil	NIOSH 9002	<	1	ND	
1R8-3037	G13	10/28/2002	10/29/2002	0-2	FS	Grab	1529183.81120000000	7448152.02845000000	735642	Brown soil	NIOSH 9002	<	1	ND	
1R8-3038	G13	10/28/2002	10/29/2002	2-6	FS	Grab	1529183.81120000000	7448152.02845000000	735643	Brown soil	NIOSH 9002	<	1	ND	
1R8-3039	G13	10/28/2002	10/29/2002	6-12	FS	Grab	1529183.81120000000	7448152.02845000000	735644	Brown soil	NIOSH 9002	<	1	ND	
1R8-3040	G12	10/28/2002	10/29/2002	0-2	FS	Grab	1529183.76803000000	7448127.74895000000	735645	Brown soil	NIOSH 9002	<	1	ND	
1R8-3041	G12	10/28/2002	10/29/2002	2-6	FS	Grab	1529183.76803000000	7448127.74895000000	735646	Brown soil	NIOSH 9002	<	1	ND	
1R8-3042	G12	10/28/2002	10/29/2002	6-12	FS	Grab	1529183.76803000000	7448127.74895000000	735647	Brown soil	NIOSH 9002	ND		ND	
1R8-3043	G11	10/28/2002	10/29/2002	0-2	FS	Grab	1529184.10749000000	7448104.99355000000	735648	Brown soil	NIOSH 9002	<	1	<	1
1R8-3044	G11	10/28/2002	10/29/2002	2-6	FS	Grab	1529184.10749000000	7448104.99355000000	735649	Brown soil	NIOSH 9002	<	1	<	1
1R8-3045	G11	10/28/2002	10/29/2002	6-12	FS	Grab	1529184.10749000000	7448104.99355000000	735650	Brown soil	NIOSH 9002	<	1	ND	
1R8-3046	G10	10/28/2002	10/29/2002	0-2	FS	Grab	1529182.31359000000	7448075.84866000000	735651	Brown soil	NIOSH 9002	<	1	<	1
1R8-3047	G10	10/28/2002	10/29/2002	2-6	FS	Grab	1529182.31359000000	7448075.84866000000	735652	Brown soil	NIOSH 9002	<	1	<	1
1R8-3048	G10	10/28/2002	10/29/2002	6-12	FS	Grab	1529182.31359000000	7448075.84866000000	735653	Brown soil	NIOSH 9002	<	1	ND	
1R8-3049	G20	10/28/2002	10/29/2002	0-2	FS	Grab	1529207.87188000000	7448082.59448000000	735654	Brown soil	NIOSH 9002	<	1	ND	
1R8-3050	G20	10/28/2002	10/29/2002	2-6	FS	Grab	1529207.87188000000	7448082.59448000000	735655	Brown soil	NIOSH 9002	<	1	ND	
1R8-3051	G20	10/28/2002	10/29/2002	6-12	FS	Grab	1529207.87188000000	7448082.59448000000	735656	Brown soil	NIOSH 9002	<	1	ND	
1R8-3052	G21	10/28/2002	10/29/2002	0-2	FS	Grab	1529204.60104000000	7448094.54059000000	735657	Brown soil	NIOSH 9002	<	1	ND	
1R8-3053	G21	10/28/2002	10/29/2002	2-6	FS	Grab	1529204.60104000000	7448094.54059000000	735658	Brown soil	NIOSH 9002	<	1	ND	
1R8-3054	G21	10/28/2002	10/29/2002	6-12	FS	Grab	1529204.60104000000	7448094.54059000000	735659	Brown soil	NIOSH 9002	<	1	ND	
1R8-3055	G22	10/28/2002	10/29/2002	0-2	FS	Grab	1529208.30691000000	7448126.47141000000	735660	Brown soil	NIOSH 9002	<	1	ND	
1R8-3056	G22	10/28/2002	10/29/2002	2-6	FS	Grab	1529208.30691000000	7448126.47141000000	735661	Brown soil	NIOSH 9002	<	1	ND	
1R8-3057	G22	10/28/2002	10/29/2002	6-12	FS	Grab	1529208.30691000000	7448126.47141000000	735662	Brown soil	NIOSH 9002	<	1	ND	
1R8-3058	G23	10/28/2002	10/29/2002	0-2	FS	Grab	1529208.49647000000	7448153.17253000000	735663	Brown soil	NIOSH 9002	<	1	ND	

Soil Sample Analytical Data by PLM for Salt Lake City Sister Site, SLC2.

Index ID	Location	Date Received	Date Analyzed	Depth (inches)	Category	Type Sample	X COORD	Y COORD	Lab ID	Appearance	Analytical Method	Q Tr-Ac	Tremolite Actinolite	Q Ch	Chrysotile
1R8-3059	G23	10/28/2002	10/29/2002	2-6	FS	Grab	1529208.49647000000	7448153.17253000000	735664	Brown soil	NIOSH 9002	<	1	ND	
1R8-3060	G23	10/28/2002	10/29/2002	6-12	FS	Grab	1529208.49647000000	7448153.17253000000	735665	Brown soil	NIOSH 9002	<	1	ND	
1R8-3061	G24	10/28/2002	10/29/2002	0-2	FS	Grab	1529208.99842000000	7448178.02983000000	735666	Brown soil	NIOSH 9002	<	1	ND	
1R8-3062	G24	10/28/2002	10/29/2002	2-6	FS	Grab	1529208.99842000000	7448178.02983000000	735667	Brown soil	NIOSH 9002	<	1	ND	
1R8-3063	G24	10/28/2002	10/29/2002	6-12	FS	Grab	1529208.99842000000	7448178.02983000000	735668	Brown soil	NIOSH 9002	<	1	ND	
1R8-3064	G25	10/28/2002	10/29/2002	0-2	FS	Grab	1529208.21533000000	7448201.98425000000	735669	Brown soil	NIOSH 9002	<	1	ND	
1R8-3065	G25	10/28/2002	10/29/2002	2-6	FS	Grab	1529208.21533000000	7448201.98425000000	735670	Brown soil	NIOSH 9002	<	1	ND	
1R8-3066	G25	10/28/2002	10/29/2002	6-12	FS	Grab	1529208.21533000000	7448201.98425000000	735671	Brown soil	NIOSH 9002		1	ND	
1R8-3067	G26	10/28/2002	10/29/2002	0-2	FS	Grab	1529209.95078000000	7448228.71332000000	735672	Brown soil	NIOSH 9002		2	ND	
1R8-3068	G26	10/28/2002	10/29/2002	2-6	FS	Grab	1529209.95078000000	7448228.71332000000	735673	Brown soil	NIOSH 9002		1	ND	
1R8-3069	G26	10/28/2002	10/29/2002	6-12	FS	Grab	1529209.95078000000	7448228.71332000000	735674	Brown soil	NIOSH 9002	<	1	ND	
1R8-3070	G27	10/28/2002	10/29/2002	0-2	FS	Grab	1529208.80332000000	7448251.13666000000	735675	Brown soil	NIOSH 9002	<	1	ND	
1R8-3071	G27	10/28/2002	10/29/2002	2-6	FS	Grab	1529208.80332000000	7448251.13666000000	735676	Brown soil	NIOSH 9002	<	1	<	1
1R8-3072	G27	10/28/2002	10/29/2002	6-12	FS	Grab	1529208.80332000000	7448251.13666000000	735677	Brown soil	NIOSH 9002	ND		<	1
1R8-3073	G37	10/28/2002	10/29/2002	0-2	FS	Grab	1529233.07319000000	7448246.36924000000	735678	Brown soil	NIOSH 9002	<	1	ND	
1R8-3074	G37	10/28/2002	10/29/2002	2-6	FS	Grab	1529233.07319000000	7448246.36924000000	735679	Brown soil	NIOSH 9002	<	1	<	1
1R8-3075	G37	10/28/2002	10/29/2002	6-12	FS	Grab	1529233.07319000000	7448246.36924000000	735680	Brown soil	NIOSH 9002	ND		<	1
1R8-3076	G36	10/28/2002	10/29/2002	0-2	FS	Grab	1529232.75949000000	7448226.50694000000	735681	Brown soil	NIOSH 9002		1	<	1
1R8-3077	G36	10/28/2002	10/29/2002	2-6	FS	Grab	1529232.75949000000	7448226.50694000000	735682	Brown soil	NIOSH 9002	<	1	ND	
1R8-3078	G36	10/28/2002	10/29/2002	6-12	FS	Grab	1529232.75949000000	7448226.50694000000	735683	Brown soil	NIOSH 9002	ND		ND	
1R8-3079	G35	10/28/2002	10/29/2002	0-2	FS	Grab	1529232.53222000000	7448202.88689000000	735684	Brown soil	NIOSH 9002	<	1	ND	
1R8-3080	G35	10/28/2002	10/29/2002	2-6	FS	Grab	1529232.53222000000	7448202.88689000000	735685	Brown soil	NIOSH 9002	<	1	ND	
1R8-3081	G35	10/28/2002	10/29/2002	6-12	FS	Grab	1529232.53222000000	7448202.88689000000	735686	Brown soil	NIOSH 9002	<	1	ND	
1R8-3082	G34	10/28/2002	10/29/2002	0-2	FS	Grab	1529232.66666000000	7448174.54218000000	735687	Brown soil	NIOSH 9002		7	ND	
1R8-3083	G34	10/28/2002	10/29/2002	2-6	FS	Grab	1529232.66666000000	7448174.54218000000	735688	Brown soil	NIOSH 9002	ND		ND	
1R8-3084	G34	10/28/2002	10/29/2002	6-12	FS	Grab	1529232.66666000000	7448174.54218000000	735689	Brown soil	NIOSH 9002	ND		ND	
1R8-3085	G33	10/28/2002	10/29/2002	0-2	FS	Grab	1529232.09049000000	7448151.65707000000	735690	Brown soil	NIOSH 9002	<	1	ND	
1R8-3086	G33	10/28/2002	10/29/2002	2-6	FS	Grab	1529232.09049000000	7448151.65707000000	735691	Brown soil	NIOSH 9002	<	1	ND	
1R8-3087	G33	10/28/2002	10/29/2002	6-12	FS	Grab	1529232.09049000000	7448151.65707000000	735692	Brown soil	NIOSH 9002	<	1	ND	
1R8-3088	G32	10/28/2002	10/29/2002	0-2	FS	Grab	1529231.37015000000	7448127.35525000000	735693	Brown soil	NIOSH 9002	ND		ND	
1R8-3089	G32	10/28/2002	10/29/2002	2-6	FS	Grab	1529231.37015000000	7448127.35525000000	735694	Brown soil	NIOSH 9002	<	1	ND	
1R8-3090	G32	10/28/2002	10/29/2002	6-12	FS	Grab	1529231.37015000000	7448127.35525000000	735695	Brown soil	NIOSH 9002	<	1	ND	
1R8-3091	G31	10/28/2002	10/29/2002	0-2	FS	Grab	1529232.09060000000	7448102.05478000000	735696	Brown soil	NIOSH 9002	<	1	ND	
1R8-3092	G31	10/28/2002	10/29/2002	2-6	FS	Grab	1529232.09060000000	7448102.05478000000	735697	Brown soil	NIOSH 9002	<	1	ND	
1R8-3093	G31	10/28/2002	10/29/2002	6-12	FS	Grab	1529232.09060000000	7448102.05478000000	735698	Brown soil	NIOSH 9002	<	1	ND	
1R8-3094	G30	10/28/2002	10/29/2002	0-2	FS	Grab	1529230.96560000000	7448071.52445000000	735699	Brown soil	NIOSH 9002	<	1	ND	
1R8-3095	G30	10/28/2002	10/29/2002	2-6	FS	Grab	1529230.96560000000	7448071.52445000000	735700	Brown soil	NIOSH 9002	<	1	ND	
1R8-3096	G30	10/28/2002	10/29/2002	6-12	FS	Grab	1529230.96560000000	7448071.52445000000	735701	Brown soil	NIOSH 9002	<	1	<	1
1R8-3097	Upper Level	10/28/2002	10/29/2002	0-2	FS	Grab	1529147.24960000000	7448109.36813000000	735702	Brown soil	NIOSH 9002	<	1	ND	
1R8-3098	Lower Level	10/28/2002	10/29/2002	0-2	FS	Grab	1529147.37447000000	7448118.23289000000	735703	Brown soil	NIOSH 9002		3	ND	
1R8-3099	Transformer	10/28/2002	10/29/2002	0-2	FS	Grab	1529159.42129000000	7448212.78079000000	735704	Brown soil	NIOSH 9002	<	1	ND	